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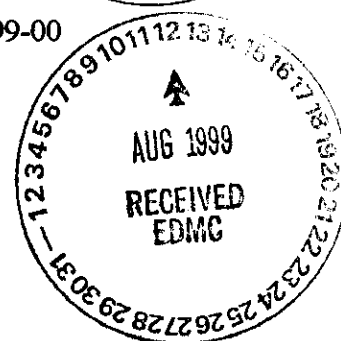
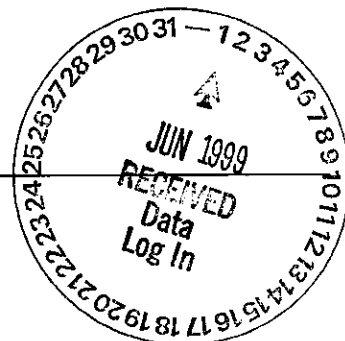
Virtual Laboratories Everywhere

0051540

**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-029
RFW# : 9904L760
SDG/SAF# : H0391/B99-029

W.O.# : 10985-001-001-9999-00
Date Received: 04-24-99

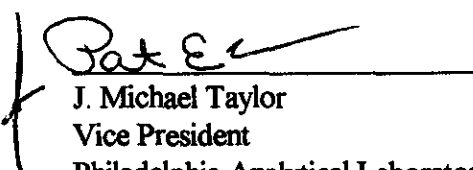


METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachate samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The TCLP extract from sample B0VCV9 was selected for the matrix spike (MS) for this analytical batch. The MS recovery was greater than 50% as per method criteria. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mld/m04-760

5-13-99
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: **9904L760**

Leaching Procedure: 1310 ☒ 1311 1312 Other: _____

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A ☒ 3010A 3015 3020A 3050A 3051 200.7 SS17
Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<u>6010B</u> <u>7041</u> ⁵	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>6010B</u> <u>7060A</u> ⁵	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<u>6010B</u> <u>7131A</u> ⁵	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<input checked="" type="checkbox"/> <u>6010B</u> <u>7191</u> ⁵	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211</u> ⁵	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<u>6010B</u> <u>7421</u> ⁵	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430</u> ⁴	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A</u> ³ <u>7471A</u> ³	<u>245.1</u> ² <u>245.5</u> ²			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610</u> ⁴	<u>200.7</u> <u>258.1</u> ⁴			<u>99</u>
Rare Earths	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Selenium	<u>6010B</u> <u>7740</u> ⁵	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B</u> ¹	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>6010B</u> <u>7761</u> ⁵	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770</u> ⁴	<u>200.7</u> <u>273.1</u> ⁴			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841</u> ⁵	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recre LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/07/99

CLIENT: TNU-HANFORD B99-029
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L760

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-003	BOVCV9	Chromium, TCLP Leachate	4740	UG/L	4.2	1.0
-004	BOVCW1	Chromium, TCLP Leachate	4640	UG/L	4.2	1.0

Recre LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/07/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	99L0258-MB1	Chromium, TCLP Leachate	4.2	u UG/L	4.2	1.0
BLANK2	99L0258-MB2	Chromium, TCLP Leachate	4.2	u UG/L	4.2	1.0
BLANK3	99L0258-MB3	Chromium, TCLP Leachate	4.2	u UG/L	4.2	1.0

Recre LabNet - Lionville

INORGANICS ACCURACY REPORT 05/07/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-003	B0VCV9	Chromium, TCLP Leachate	9430	4740	5000	93.7	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/07/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-003REP	B0VVCV9	Chromium, TCLP Leachate	4740	4700	0.98	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/07/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SAMPLE	SPIKED AMOUNT	SPIKED UNITS	%RECOV
-----	-----	-----	-----	-----	-----	-----
LCS1	99L0258-LC1	Chromium, LCS	500	500	UG/L	100

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-029

DATE RECEIVED: 04/24/99

RFW LOT # :9904L760

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

BOVVCV9

TCLP	001	S	99LTO047	04/22/99	04/27/99	04/28/99
------	-----	---	----------	----------	----------	----------

BOVCW1

TCLP	002	S	99LTO047	04/22/99	04/27/99	04/28/99
------	-----	---	----------	----------	----------	----------

BOVVCV9

CHROMIUM, TCLP LEACH	003	W	99L0258	04/28/99	05/04/99	05/04/99
CHROMIUM, TCLP LEACH	003 REP	W	99L0258	04/28/99	05/04/99	05/04/99
CHROMIUM, TCLP LEACH	003 MS	W	99L0258	04/28/99	05/04/99	05/04/99

BOVCW1

CHROMIUM, TCLP LEACH	004	W	99L0258	04/28/99	05/04/99	05/04/99
----------------------	-----	---	---------	----------	----------	----------

LAB QC:

CHROMIUM LABORATORY	LC1 BS	W	99L0258	N/A	05/04/99	05/04/99
CHROMIUM, TCLP LEACH	MB1	W	99L0258	N/A	05/04/99	05/04/99
CHROMIUM, TCLP LEACH	MB2	W	99L0258	N/A	05/04/99	05/04/99
CHROMIUM, TCLP LEACH	MB3	W	99L0258	N/A	05/04/99	05/04/99

9904L 760

Custody Transfer Record/Lab Work Request

RECRA
LabNet 011

Client <u>TNU Hanford B49-029</u>			Refrigerator #													
Est. Final Proj. Sampling Date			#/Type Container		Liquid											
Project # <u>10985-001-001-999-00</u>			Volume		Solid											
Project Contact/Phone #			Preservatives		Liquid											
RECRA Project Manager <u>JS</u>			ANALYSES REQUESTED		Solid											
QC <u>Apec</u> Del <u>Atk</u> TAT <u>30 day</u>																
Date Rec'd <u>4/24/99</u> Date Due <u>5/24/99</u>																
Account #																

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only												
			MS	MSD				VOA	BNA	Res/PCB	Herb									
S - Soil																				
SE - Sediment																				
SO - Solid																				
SL - Sludge																				
W - Water																				
O - Oil																				
A - Air																				
DS - Drum Solids																				
DL - Drum Liquids																				
L - EP/TCLP Leachate																				
WI - Wipe																				
X - Other																				
F - Fish																				

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Saf # B49-029

COMPOSITE
WASTE

DATE/REVISIONS:

1. see labnet
2. Run matrix QC
3.
4.
5.
6.

RECRA LabNet Use Only

- Samples were:
- 1) Shipped ✓ or Hand Delivered ✓
 - 2) Ambient or Chilled ✓
 - 3) Received in Good Condition ✓ or N
 - 4) Labels Indicate Properly Preserved ✓ or N
 - 5) Received Within Holding Times ✓ or N
- COC Tape was:
- 1) Present on Outer Package ✓ or N
 - 2) Unbroken on Outer Package ✓ or N
 - 3) Present on Sample ✓ or N
 - 4) Unbroken on Sample ✓ or N
 - 5) COC Record Present Upon Sample Rec't ✓ or N

Relinquished by	Received by	Date	Time
<u>Ful Ec</u>	<u>K Hanley</u>	<u>4-24-99</u>	<u>0930</u>

Relinquished by	Received by	Date	Time
<u>ORIGINAL</u>	<u>REWRITTEN</u>		

Discrepancies Between Samples Labels and COC Record? Y or N (N)

NOTES:

* 423579524982

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-029-16		Page 1 of 1		012	
Collector Doug Bowers		Company Contact Thomas E. Pickett		Telephone No. 509-373-4630		Project Coordinator TRENT, SJ		Price Code IV/FA		Data Turnaround 45 Days			
Project Designation 100-KR-4 Pump & Treat - Resin Sampling FY 99		Sampling Location 100-KR-4 Pump and Treat				SAF No. B99-029							
Ice Chest No. ERC 99 011		Field Logbook No. EFL 1133-7				Method of Shipment Federal Express							
Shipped To FMA/RECRA 420 4-22-99		Offsite Property No. A990121				Bill of Lading/Air Bill No. 423579524982							
												COA R10KR4C570	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	None	None	None	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	G		
	No. of Container(s)	1	1	1	1	1	1	1	1	1		
Special Handling and/or Storage None noted on SAF.	Volume	60mL	60mL	60mL	60mL	60mL	125mL	250mL	500g			

SAMPLE ANALYSIS				Activity Scan	Isotopic Uranium	Strontium-89,90 - Total Sr	Technetium-99	Tritium - H3	IC Anions - 300.0 (Nitrate)	Metals by ICP (TCLP) - 1311/6010A (Chromium)		
-----------------	--	--	--	---------------	------------------	----------------------------	---------------	--------------	-----------------------------	--	--	--

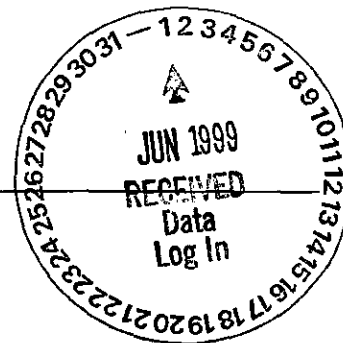
Sample No.	Matrix *	Sample Date	Sample Time									
B0VCV9	Other Solid	4-22-99	0810						X	X		B0VCW0 tot 97711
B0VCW1	Other Solid	4-22-99	0828						X	X		B0VCW2 tot 97720

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>Doug Bowers</i>	Received By <i>SAF</i>	In 1 A @ 4°C COLLECTOR UNAVAILABLE TO SIGN COC	Soil Water Vapor Other Solid Other Liquid
Relinquished By <i>REF 1A 42399 1100</i>	Received By <i>SAF SIGALE 42399 1100</i>		
Relinquished By <i>WJALE 42399 1100</i>	Received By <i>FED EX</i>		
Relinquished By <i>Jeelup</i>	Received By <i>Todd 4/24/99 0930</i>		

LABORATORY SECTION	Received By _____ Title _____	Date/Time _____
FINAL SAMPLE POSITION	Disposal Method _____	Disposed By _____ Date/Time _____



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Virtual Laboratories Everywhere



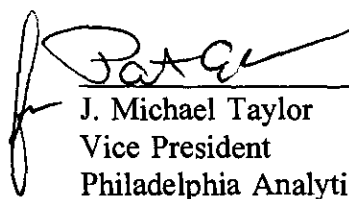
Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD B99-029
RFW# : 9904L760
SDG# : H0391
SAF# : B99-029

W.O. # : 10985-001-001-9999-00
Date Received: 04-24-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Nitrate was within method criteria.
6. The Laboratory Control Samples (LCS) for Nitrate was within the laboratory control limits.
7. The matrix spike recovery for Nitrate was within the 75-125% control limits.
8. The replicate analysis for Nitrate was within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-25-99
Date

njp\i04-760

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

WET CHEMISTRY

METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __ by coupon __ by pH		__ 1110 (mod) __ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Nitrate

Method: EPA 300.0

002

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/05/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B0VCV9	% Solids	45.6	%	0.01	1.0
		Nitrate by IC	7.9	MG/KG	2.7	1.0
-002	B0VCW1	% Solids	43.8	%	0.01	1.0
		Nitrate by IC	9.1	MG/KG	2.9	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/05/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	99LXC049-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/05/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-001	BOVCV9	Nitrate by IC	75	7.9	55	121.4	1.0
BLANK10	99LXC049-MB1	Nitrate by IC	24	1.2 u	25	96.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/05/99

CLIENT: TNU-HANFORD B99-029

RECRA LOT #: 9904L760

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD	DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----
-001REP	BOVCV9	Nitrate by IC	7.9	8.5 7.1	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-029

DATE RECEIVED: 04/24/99

RFW LOT # :9904L760

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B0VCV9

% SOLIDS	001	S	99L&S057	04/22/99	04/26/99	04/27/99
NITRATE BY IC	001	S	99LXC049	04/22/99	04/30/99	04/30/99
NITRATE BY IC	001 REP	S	99LXC049	04/22/99	04/30/99	04/30/99
NITRATE BY IC	001 MS	S	99LXC049	04/22/99	04/30/99	04/30/99
TCLP	001	S	99LTO047	04/22/99	04/27/99	04/28/99

B0VCW1

% SOLIDS	002	S	99L&S057	04/22/99	04/26/99	04/27/99
NITRATE BY IC	002	S	99LXC049	04/22/99	04/30/99	04/30/99
TCLP	002	S	99LTO047	04/22/99	04/27/99	04/28/99

LAB QC:

NITRATE BY IC	MB1	S	99LXC049	N/A	04/30/99	04/30/99
NITRATE BY IC	MB1 BS	S	99LXC049	N/A	04/30/99	04/30/99

99042 7/60

Custody Transfer Record/Lab Work Request

[illegible][illegible]

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Ref # B49-029

COMPOSITE WASTE

DATE/REVISIONS:

REVISIONS:
*1. see attachment

2. Run matrix QC

RECRA LabNet Use Only

Samples were:

- 1) Shipped ☒ or Hand Delivered ☐
Airline ☒
- 2) Ambient or Chilled ☒
- 3) Received in Good Condition ☒ or No ☐
- 4) Labels Indicate Properly Preserved ☒

COC Tape was:

- 1) Present on Outer Package ☒ Y or N
- 2) Unbroken on Outer Package ☒ Y or N
- 3) Present on Sample ☒ Y or N
- 4) Unbroken on Sample ☒ Y or N

COC Record Present Upon Sample Rec'd ☒ Y or N

Relinquished by <i>Fu Ex</i>	Received by <i>K. H. H. H.</i>	Date <i>4-27-99</i>	Time <i>0930</i>	Relinquished by <i>[Signature]</i>	Received by <i>[Signature]</i>	Date <i>[Blank]</i>	Time <i>[Blank]</i>	Discrepancies Between Samples Labels and COC Record? Y or <i>(N)</i>	NOTES: <i>* 423579524982</i>	Property Received <i>0</i> or N	Sample <i>0</i> or N	COC Record Present Upon Sample Rec'd <i>(Y)</i> or N	5) Received Within Holding Times <i>0</i> or N	<i>Case Temp = 19.0°C</i>
ORIGINAL REWRITTEN														

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-029-16		Page 1 of 1	
Collector Doug Bowers		Company Contact Thomas E. Pickett		Telephone No. 509-373-4630		Project Coordinator TRENT, SJ		Price Code IV/FA		Data Turnaround 45 Days	
Project Designation 100-KR-4 Pump & Treat - Resin Sampling FY 99		Sampling Location 100-KR-4 Pump and Treat		SAF No. B99-029							
Ice Chest No. ERC 99 011		Field Logbook No. EFL 1133-7		Method of Shipment Federal Express							
Shipped To TMA/RECRA 420 4-22-99		Offsite Property No. A990121		Bill of Lading/Air Bill No. 423579524982							
				COA R10KR4C570							

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage None noted on SAF.	Preservation	None	None	None	None	None	None	None	None	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG	G				
	No. of Container(s)	1	1	1	1	1	1	1	1				
	Volume	60mL	60mL	60mL	60mL	125mL	250mL	500g					

SAMPLE ANALYSIS	Activity Scan	Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	IC Anions - 300.0 (Nitrate)	Metals by ICP (TCLP) - 1311/6010A (Chromium)			
------------------------	---------------	------------------	-----------------------------	---------------	--------------	-----------------------------	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time										
B0VCV9	Other Solid	4-22-99	0810							X	X		B0VCV9 total 87711
B0VCW1	Other Solid	4-22-99	0828							X	X		B0VCW1 total 87720

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>Doug Bowers</i> Date/Time <i>4-22-99/1040</i>	Received By <i>REF 1A 3728</i> Date/Time <i>4-22-99/1040</i>	<i>in 1 A @ 4°C</i> COLLECTOR UNAVAILABLE TO SIGN COC	Soil Water Vapor Other Solid Other Liquid
Relinquished By <i>REF 1A 42399 1100</i> Date/Time <i>4-22-99/1100</i>	Received By <i>MARK SJGALE</i> Date/Time <i>42399 1100</i>		
Relinquished By <i>SJGALE Mark</i> Date/Time <i>42399 1100</i>	Received By <i>FED EX</i> Date/Time <i>4/24/99 0930</i>		
Relinquished By <i>Deel up</i> Date/Time <i>4/24/99 0930</i>	Received By <i>Deel up</i> Date/Time <i>4/24/99 0930</i>		

LABORATORY SECTION	Received By _____ Title _____	Date/Time _____
FINAL SAMPLE DISPOSITION	Disposal Method _____	Disposed By _____ Date/Time _____

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0391 is composed of two solid samples designated under SAF No. B99-029 with a Project Designation of: 100-KR-4 Pump and Treat.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. All results were reported by fax on June 10, 1999.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

The QC blank was higher than the MDA. This could have biased the sample results to be slightly high than their actual activity. No other problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

No problems were encountered during the processing of the samples.

2.3 Technetium-99 Analyses

No problems were encountered during the processing of the samples.

2.4 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

SDG 7117
Contact L.A. Johnson

SAMPLE SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF	
				SAMPLE ID	SAF NO	CUSTODY	COLLECTED
B0VCV9	100-KR-4-Pump and Treat	SOLID		N904145-01	B99-029	B99-029-16	04/22/99 08:10
B0VCW1	100-KR-4-Pump and Treat	SOLID		N904145-02	B99-029	B99-029-16	04/22/99 08:28
Method Blank		SOLID		N904145-04	B99-029		
Lab Control Sample		SOLID		N904145-03	B99-029		
Duplicate (N904145-01)	100-KR-4-Pump and Treat	SOLID		N904145-05	B99-029		04/22/99 08:10

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 06/15/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

SDG 7117
Contact L.A. Johnson

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7117	B99-029-16	B0VCV9	SOLID	100.0			04/24/99 2	N904145-01	7117-001
		B0VCW1	SOLID	100.0			04/24/99 2	N904145-02	7117-002
		Method Blank	SOLID					N904145-04	7117-004
		Lab Control Sample	SOLID					N904145-03	7117-003
		Duplicate (N904145-01)	SOLID	100.0			04/24/99 2	N904145-05	7117-005

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0391

SDG 7117Contact L.A. Johnson

PREP BATCH SUMMARY

Client HanfordContract TRB-SBB-207925Case no SDG-H0391

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED			QUALI-					
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIERS	
Alpha Spectroscopy													
U	SOLID	Uranium, Isotopic in Soil	6880-054	5.0	2			1	1	1/1			
Beta Counting													
SR	SOLID	Total Strontium in Soil	6880-054	10.0	2			1	1	1/1			
TC	SOLID	Technetium 99 in Soil	6880-054	10.0	2			1	1	1/1			
Liquid Scintillation Counting													
H	SOLID	Tritium in Soil	6880-054	10.0	2			1	1	1/1			

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-PBSVersion 3.06Report date 06/15/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

SDG 7117
Contact L.A. Johnson

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED		SUF-						
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
B0VCV9		N904145-01	7117-001	H		05/23/99	06/14/99	TAH	Tritium in Soil	
100-KR-4-Pump and Treat	SOLID	04/22/99	7117-001	SR		05/12/99	06/14/99	TAH	Total Strontium in Soil	
B99-029-16	B99-029	04/24/99	7117-001	TC		06/02/99	06/14/99	TAH	Technetium 99 in Soil	
			7117-001	U		05/12/99	06/14/99	TAH	Uranium, Isotopic in Soil	
B0VCW1		N904145-02	7117-002	H		05/23/99	06/14/99	TAH	Tritium in Soil	
100-KR-4-Pump and Treat	SOLID	04/22/99	7117-002	SR		05/12/99	06/14/99	TAH	Total Strontium in Soil	
B99-029-16	B99-029	04/24/99	7117-002	TC		06/02/99	06/14/99	TAH	Technetium 99 in Soil	
			7117-002	U		05/13/99	06/14/99	TAH	Uranium, Isotopic in Soil	
Method Blank		N904145-04	7117-004	H		05/23/99	06/14/99	TAH	Tritium in Soil	
	SOLID		7117-004	SR		05/12/99	06/14/99	TAH	Total Strontium in Soil	
	B99-029		7117-004	TC		06/04/99	06/14/99	TAH	Technetium 99 in Soil	
			7117-004	U		05/12/99	06/14/99	TAH	Uranium, Isotopic in Soil	
Lab Control Sample		N904145-03	7117-003	H		05/23/99	06/14/99	TAH	Tritium in Soil	
	SOLID		7117-003	SR		05/12/99	06/14/99	TAH	Total Strontium in Soil	
	B99-029		7117-003	TC		06/02/99	06/14/99	TAH	Technetium 99 in Soil	
			7117-003	U		05/12/99	06/14/99	TAH	Uranium, Isotopic in Soil	
Duplicate (N904145-01)		N904145-05	7117-005	H		05/23/99	06/14/99	TAH	Tritium in Soil	
100-KR-4-Pump and Treat	SOLID	04/22/99	7117-005	SR		05/12/99	06/14/99	TAH	Total Strontium in Soil	
	B99-029	04/24/99	7117-005	TC		06/04/99	06/14/99	TAH	Technetium 99 in Soil	
			7117-005	U		05/12/99	06/14/99	TAH	Uranium, Isotopic in Soil	

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
H	B99-029	Tritium in Soil	EPA906.0		2		1	1	1		5
SR	B99-029	Total Strontium in Soil			2		1	1	1		5
TC	B99-029	Technetium 99 in Soil	TC99TRLSC		2		1	1	1		5
U	B99-029	Uranium, Isotopic in Soil	UPLATE		2		1	1	1		5
TOTALS					8		4	4	4		20

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 06/15/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0391

N904145-04

Method Blank

METHOD BLANK

SDG <u>7117</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0391</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904145-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7117-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-029</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.011	0.047	0.079	0.50	U	H
Technetium 99	14133-76-7	<u>0.622</u>	0.11	0.24	0.50		TC
Uranium 233/234	U-233/234	0.014	0.014	0.054	0.30	U	U
Uranium 235	15117-96-1	0	0.017	0.065	0.30	U	U
Uranium 238	U-238	0	0.014	0.054	0.30	U	U
Total Strontium	SR-RAD	0.038	0.13	0.17	1.0	U	SR

100-KR-4 Pump&Treat-Resin Smply FY99

QC-BLANK 30645

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/15/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0391

N904145-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7117
Contact L.A. JohnsonClient/Case no Hanford SDG-H0391
Case no TRB-SBB-207925Lab sample id N904145-03
Dept sample id 7117-003Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-029

ANALYTE	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2 σ ERR pCi/g	REC %	3 σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	4.14	0.14	0.081	0.50		H	4.21	0.17	98	83-117	80-120
Technetium 99	33.2	0.75	0.29	0.50	B	TC	34.9	1.4	95	84-116	80-120
Uranium 233/234	3.78	0.48	0.24	0.30		U	4.18	0.17	90	81-119	80-120
Uranium 235	2.90	0.41	0.075	0.30		U	3.42	0.14	85	80-120	80-120
Uranium 238	3.80	0.48	0.23	0.30		U	4.31	0.17	88	81-119	80-120
Total Strontium	13.6	0.40	0.16	1.0		SR	12.6	0.50	108	82-118	

100-KR-4 Pump&Treat-Resin Smply FY99

QC-LCS 30644

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 06/15/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

N904145-05

B0VCV9

DUPLICATE

SDG <u>7117</u>		Client/Case no <u>Hanford</u> <u>SDG-H0391</u>	
Contact <u>L.A. Johnson</u>		Case no <u>TRB-SBB-207925</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>N904145-05</u>	Lab sample id <u>N904145-01</u>	Client sample id <u>B0VCV9</u>	
Dept sample id <u>7117-005</u>	Dept sample id <u>7117-001</u>	Location/Matrix <u>100-KR-4-Pump and Treat</u> <u>SOLID</u>	
	Received <u>04/24/99</u>	Collected <u>04/22/99 08:10</u>	
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>B99-029-16</u> <u>B99-029</u>	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	6.17	0.16	0.080	0.50		H	6.78	0.18	0.084		9	22	
Technetium 99	1.43	0.36	<u>0.73</u>	0.50	B	TC	1.87	0.29	<u>0.65</u>	B	27	47	
Uranium 233/234	0.014	0.029	0.055	0.30	U	U	0.057	0.049	0.062	U	-		
Uranium 235	0.009	0.018	0.067	0.30	U	U	0	0.020	0.075	U	-		
Uranium 238	0.014	0.015	0.055	0.30	U	U	0.024	0.033	0.062	U	-		
Total Strontium	-0.040	0.11	0.16	1.0	U	SR	0.004	0.14	0.18	U	-		

100-KR-4 Pump&Treat-Resin Smply FY99

QC-DUP#1 30646

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>06/15/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0391

N904145-01

B0VCV9

DATA SHEET

SDG <u>7117</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0391</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904145-01</u>	Client sample id <u>B0VCV9</u>	
Dept sample id <u>7117-001</u>	Location/Matrix <u>100-KR-4-Pump and Treat</u>	<u>SOLID</u>
Received <u>04/24/99</u>	Collected <u>04/22/99 08:10</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-029-16</u>	<u>B99-029</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	6.78	0.18	0.084	0.50		H
Technetium 99	14133-76-7	1.87	0.29	<u>0.65</u>	0.50	B	TC
Uranium 233/234	U-233/234	0.057	0.049	0.062	0.30	U	U
Uranium 235	15117-96-1	0	0.020	0.075	0.30	U	U
Uranium 238	U-238	0.024	0.033	0.062	0.30	U	U
Total Strontium	SR-RAD	0.004	0.14	0.18	1.0	U	SR

100-KR-4 Pump&Treat-Resin Smply FY99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0391

N904145-02

B0VCW1

DATA SHEET

SDG <u>7117</u>	Client/Case no <u>Hanford</u>	SDG-H0391
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904145-02</u>	Client sample id <u>B0VCW1</u>	
Dept sample id <u>7117-002</u>	Location/Matrix <u>100-KR-4-Pump and Treat</u>	<u>SOLID</u>
Received <u>04/24/99</u>	Collected <u>04/22/99 08:28</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-029-16</u>	<u>B99-029</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	5.83	0.16	0.082	0.50		H
Technetium 99	14133-76-7	1.18	0.33	<u>0.84</u>	0.50	B	TC
Uranium 233/234	U-233/234	0.016	0.016	0.062	0.30	U	U
Uranium 235	15117-96-1	0	0.020	0.075	0.30	U	U
Uranium 238	U-238	0.049	0.033	0.062	0.30	U	U
Total Strontium	SR-RAD	-0.028	0.11	0.16	1.0	U	SR

100-KR-4 Pump&Treat-Resin Smply FY99

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/15/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

Test U Matrix SOLID
SDG 7117
Contact L.A. Johnson

METHOD SUMMARY
URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%)			
								1+3	2σ	2+3	2σ
Preparation batch 6880-054											
BOVCV9	N904145-01			7117-001	U	U	U				
BOVCW1	N904145-02			7117-002	U	U	U				
BLK (QC ID=30645)	N904145-04			7117-004	U	U	U				
LCS (QC ID=30644)	N904145-03			7117-003	ok	ok	ok				
Duplicate (N904145-01)	N904145-05			7117-005	- U	- U	- U				
Nominal values and limits from method											
				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100-KR-4 Pump&Treat-Resin Smply FY99				Averages							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-054 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.54																
BOVCV9	N904145-01			0.075	1.05			88		157			20	05/11/99	05/12	SS-013
BOVCW1	N904145-02			0.075	1.02			89		155			21	05/11/99	05/13	SS-003
BLK (QC ID=30645)	N904145-04			0.065	1.00			104		169				05/11/99	05/12	SS-035
LCS (QC ID=30644)	N904145-03			0.24	1.00			95		157				05/11/99	05/12	SS-015
Duplicate (N904145-01) (QC ID=30646)	N904145-05			0.067	1.05			97		169			20	05/11/99	05/12	SS-036
Nominal values and limits from method																
				0.30	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
EP-060		Soil Preparation, rev 0
EP-070		Soil Dissolution, rev 0
EP-910		Uranium Purification, rev 0
EP-008		Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	<u>0.10</u> ± <u>0.15</u>
FOR 5 SAMPLES	YIELD	<u>95</u> ± <u>13</u>

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-CMS</u>
Version	<u>3.06</u>
Report date	<u>06/15/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Test SR Matrix SOLID
SDG 7117
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Total Strontium
------------------	------------------	-----------------	------------------	--------------------

Preparation batch 6880-054

BOVCV9	N904145-01		7117-001	U
BOVCW1	N904145-02		7117-002	U
BLK (QC ID=30645)	N904145-04		7117-004	U
LCS (QC ID=30644)	N904145-03		7117-003	ok
Duplicate (N904145-01)	N904145-05		7117-005	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
100-KR-4 Pump&Treat-Resin Smpg FY99

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	------------------	-----------------	---------------	------------------	-----------	-------------	---------------	------------	----------	--------------	-------------	--------------	--------------	-------------------	------	----------

Preparation batch 6880-054 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.54

BOVCV9	N904145-01		0.18	1.04				84	400			20	05/12/99	05/12	GRB-201	
BOVCW1	N904145-02		0.16	1.08				86	400			20	05/12/99	05/12	GRB-202	
BLK (QC ID=30645)	N904145-04		0.17	1.00				91	400				05/12/99	05/12	GRB-204	
LCS (QC ID=30644)	N904145-03		0.16	1.00				92	400				05/12/99	05/12	GRB-203	
Duplicate (N904145-01)	N904145-05		0.16	1.04				90	400			20	05/12/99	05/12	GRB-205	
(QC ID=30646)																

Nominal values and limits from method 1.0 1.00 100 180

PROCEDURES RP-500 Strontium - Initial Separation, rev 0
RP-519 Strontium-89,90 Demounting and Yttrium
Purification, rev 0

AVERAGES ± 2 SD MDA 0.17 ± 0.018
FOR 5 SAMPLES YIELD 89 ± 7

METHOD SUMMARIES

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/15/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0391

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Test TC Matrix SOLID
SDG 7117
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Technetium 99
Preparation batch 6880-054				
BOVCV9	N904145-01		7117-001	1.87
BOVCW1	N904145-02		7117-002	1.18
BLK (QC ID=30645)	N904145-04		7117-004	<u>0.622</u>
LCS (QC ID=30644)	N904145-03		7117-003	ok
Duplicate (N904145-01)	N904145-05		7117-005	ok

Nominal values and limits from method RDLs (pCi/g) 0.50
100-KR-4 Pump&Treat-Resin Smpg FY99

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-054 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.54																
BOVCV9	N904145-01		<u>0.65</u>	<u>1.00</u>				52		101			41	05/28/99	06/02	GRB-218
BOVCW1	N904145-02		<u>0.84</u>	<u>1.00</u>				41		101			41	05/28/99	06/02	GRB-219
BLK (QC ID=30645)	N904145-04		0.24	2.00				61		132				05/28/99	06/04	GRB-220
LCS (QC ID=30644)	N904145-03		0.29	2.00				57		101				05/28/99	06/02	GRB-220
Duplicate (N904145-01) (QC ID=30646)	N904145-05		<u>0.73</u>	<u>1.00</u>				46		100			43	05/28/99	06/04	GRB-220

Nominal values and limits from method 0.50 2.00 20-105 50 180

PROCEDURES REFERENCE TC99TRLSC
EP-060 Soil Preparation, rev 0
EP-020 Sample Leach For Technetium-99, rev 0
EP-540 Technetium-99 Purification, rev 0

AVERAGES ± 2 SD MDA 0.55 ± 0.54
FOR 5 SAMPLES YIELD 51 ± 16

METHOD SUMMARIES

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Protocol Hanford
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0391

Test H Matrix SOLID
SDG 7117
Contact L.A. Johnson

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Tritium
Preparation batch 6880-054				
B0VCV9	N904145-01	7117-001		6.78
B0VCW1	N904145-02	7117-002		5.83
BLK (QC ID=30645)	N904145-04	7117-004		U
LCS (QC ID=30644)	N904145-03	7117-003		ok
Duplicate (N904145-01)	N904145-05	7117-005		ok

Nominal values and limits from method RDLs (pCi/g) 0.50
100-KR-4 Pump&Treat-Resin Smplg FY99

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-054 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.54																
B0VCV9	N904145-01		0.084	19.2				100		120			31	05/21/99	05/23	LSC-005
B0VCW1	N904145-02		0.082	20.1				100		120			31	05/21/99	05/23	LSC-005
BLK (QC ID=30645)	N904145-04		0.079	20.0				100		120				05/21/99	05/23	LSC-005
LCS (QC ID=30644)	N904145-03		0.081	20.0				100		120				05/21/99	05/23	LSC-005
Duplicate (N904145-01)	N904145-05		0.080	20.0				100		120			31	05/21/99	05/23	LSC-005
(QC ID=30646)																

Nominal values and limits from method 0.50 20.0 25 180

PROCEDURES REFERENCE EPA906.0
EP-060 Soil Preparation, rev 0
EP-211 Tritium in Solid Samples by Azeotropic
Distillation, rev 0

AVERAGES ± 2 SD MDA 0.081 ± 0.004
FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SDG 7117
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

S A M P L E S U M M A R Y

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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SAMPLE DELIVERY GROUP H0391

SDG 7117
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

P R E P A R A T I O N B A T C H S U M M A R Y

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified.
Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Contact L.A. Johnson

R E P O R T G U I D E

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W O R K S U M M A R Y

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
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D A T A S H E E T

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0391

SDG 7117
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

Client Hanford
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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

Client Hanford
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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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SDG 7117
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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Contact L.A. Johnson

REPORT GUIDE

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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Contact L.A. Johnson

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Client Hanford
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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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SDG 7117
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
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M E T H O D S U M M A R Y

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SAMPLE DELIVERY GROUP H0391

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Contact L.A. Johnson

GUIDE, cont.

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Case no SDG-H0391

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/15/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0391

SDG 7117
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0391

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0391

SDG 7117
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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/15/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-029-16		Page 1 of 1											
Collector Doug Bowers		Company Contact Thomas E. Pickett		Telephone No. 509-373-4630		Project Coordinator TRENT, SJ		Price Code IV/FA		Data Turnaround 45 Days											
Project Designation 100-KR-4 Pump & Treat - Resin Sampling FY 99		Sampling Location 100-KR-4 Pump and Treat		SAF No. B99-029																	
Ice Chest No. ERC 99 018		Field Logbook No. EFL 1133-7		Method of Shipment Federal Express																	
Shipped To TMA/REGRA 4-22-99		Offsite Property No. A 990122		Bill of Lading/Air Bill No. 423579524993																	
				COA R10KR4C570																	
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		None		None		None		None		None		None					
				Type of Container		aG		aG		aG		aG		aG		G					
				No. of Container(s)		1		1		1		1		1		1					
				Volume		60mL		60mL		60mL		60mL		125mL		250mL		500g			
Special Handling and/or Storage None noted on SAF.																					
SAMPLE ANALYSIS				Activity Scan		Isotopic Uranium		Strontium-89,90 -- Total Sr		Technetium-99		Tritium - H3		IC Anions - 300.0 (Nitrate)		Metals by ICP (TCLP) - 1311/6010A (Chromium)					
Sample No.		Matrix *		Sample Date		Sample Time															
✓ B0VCV9		Other Solid		4-22-99		0810		X		X		X		X		X		Total 97711		B0VCW0	
✓ B0VCW1		Other Solid		4-22-99		0828		X		X		X		X		X		Total 97720		B0VCW2	
CHAIN OF POSSESSION		Sign/Print Names						SPECIAL INSTRUCTIONS						Matrix *							
Relinquished By <i>Doug Bowers</i>		Date/Time <i>4-22-99/1040</i>		Received By <i>Bob LA</i>		Date/Time <i>4-22-99/1040</i>		<i>in 1A @ 4°C</i> COLLECTOR UNAVAILABLE TO SIGN COC						Soil Water Vapor Other Solid Other Liquid							
Relinquished By <i>AEF</i>		Date/Time <i>4/23/99 1100</i>		Received By <i>SIGALE</i>		Date/Time <i>4/23/99 1100</i>															
Relinquished By <i>SIGALE</i>		Date/Time <i>4/23/99 1100</i>		Received By <i>FED EX</i>		Date/Time <i>4-23-99</i>															
Relinquished By <i>Fed Ex</i>		Date/Time <i>4-24-99 1022</i>		Received By <i>JP</i>		Date/Time <i>4-24-99</i>															
LABORATORY SECTION		Received By _____						Date/Time _____													
FINAL SAMPLE DISPOSITION		Disposal Method _____						Disposed By _____						Date/Time _____							

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Beritel Hanford</u>	Date/Time received <u>4-24-99 10:00</u>		
CoC No. <u>B99-D2A-16</u>			
Container I.D. No. <u>ERC99-DIF</u>	Requested TAT (Days) <u>45</u>	P.O. Received Yes [] No [x]	
INSPECTION			
1. Custody seals on shipping container intact?	Yes [x]	No []	N/A []
2. Custody seals on shipping container dated & signed?	Yes [x]	No []	N/A []
3. Custody seals on sample containers intact?	Yes [x]	No []	N/A []
4. Custody seals on sample containers dated & signed?	Yes [x]	No []	N/A []
5. Cooler Temperature: _____	Packing material is:		Wet [] Dry [x]
6. Number of samples in shipping container:	<u>2</u>		
7. Number of containers per sample:	<u>5</u> (Or see CoC _____)		
8. Paperwork agrees with samples?	Yes [x]	No []	
9. Samples have: Tape [x] Hazard labels [] Rad labels [] Appropriate sample labels [x]			
10. Samples are: In good condition [x] Leaking [] Broken Container [] Missing []			
11. Describe any anomalies:	<div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div>		
13. Was P.M. notified of any anomalies?	Yes []	No []	Date _____
14. Received by <u>APC</u>	Date: <u>4-24-99</u> Time: <u>10:00</u>		
LOGIN			
TNU W.O. No. _____	Group No. _____	Client W.O. No. _____	
PROGRAM MANAGER			
Sample holding times exceeded?	Yes []	No []	
Client Notified: Name _____	Date/time _____		